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PERSONALITY DIMENSIONS, SENSE OF COHERENCE AND SELF-ESTEEM AS RISK/PROTECTIVE FACTORS FOR SMOKING AMONG UNIVERSITY STUDENTS

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Abstract: The effect of personality (extraversion, neuroticism, psychoticism), self-esteem and sense of coherence on smoking among university students (n = 830, mean age 20.5 years, data collected in 2004, Slovakia) was explored using logistic regression separately among males and females. Higher extraversion plus, among females, higher negative self-esteem and lower meaningfulness, increase the probability of being a smoker. It is important to take into account the different function of personality in health promotion. In this case extraversion and negative self-esteem seem to be the risk factors, while meaningfulness seems to be a protective factor with regard to smoking.

Key words: smoking, extraversion, neuroticism, psychoticism, self-esteem, sense of coherence

INTRODUCTION

Each person is characterized by a unique combination of personality traits that largely determines who they are and how they behave, and these traits may have important consequences for a broad range of behavioral outcomes (Robinson et al., 1996), including smoking (Terracciano, Costa, 2004). It is important to explore whether certain personality traits increase the risk of being a smoker, although personality traits are only one of the possible factors underlying risky behavior (Orosová, Gajdošová, Madarasová Geckova, van Dijk, 2007).

Eysenck's Personality Dimensions and Smoking

Some of the most consistent data come from research with the Eysenck Personality Questionnaire (EPQ), a highly reliable and well validated inventory that measures basic personality super-factors or dimen-

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sions (Foreyt et al., 1997; Rondina et al., 2005). The EPQ's personality dimensions are thought to be influenced by biological factors, and the dimensions have demonstrated high degrees of heritability (Gilbert, 1995). The personality dimensions of EPQ are: extraversion, neuroticism and psychoticism. Studies using the EPQ have found consistent relationships between certain EPQ dimensions and smoking. A substantial number of prospective and cross-sectional studies have found high scores on extraversion, neuroticism and psychoticism to be predictive for smoking (Parkers, 1984; Arai et al., 1997; Kassel et al., 2003). S. Wijatkowski et al. (1990) showed that persistent smokers (girls and boys) scored significantly higher on the two EPQ dimensions, extraversion and neuroticism. A possible explanation for this is that individuals scoring high in extraversion might smoke in search of stimulation, whereas individuals high in neuroticism might smoke to reduce tension and anxiety (Eysenck, 1980; Rondina et al., 2005). Some studies have found that smokers score higher than non-smokers on Eysenck's psychoticism (Spielberg, Jacobs, 1982). D.G. Gilbert and B.O. Gilbert (1995) concluded that smokers differed most reliably on psychoticism (especially impulsivity, antisocial behavior, sensation seeking and aggression) and neuroticism. K.R. Parkes (1984) performed discriminate analyses on Eysenck's dimensions and found that interactions between neuroticism and psychoticism and between neuroticism and extraversion contributed significantly to differentiation between smokers and non-smokers.

Sense of Coherence and Smoking

A. Antonovsky (1979, 1987, 1992) proposed that global life orientation sense of coherence (SOC) constitutes a person's coherent understanding of the world. The first of three dimensions of SOC - comprehensibility (the cognitive aspect) refers to the ability to seek order and logical connections in the world and interpersonal relationships. It is a measure of belief in life's predictability. It also includes the ability to understand other people and to control one's own thoughts and emotions. Manageability (the instrumental aspect) is the sense of personal and social competences, of adequacy of resources needed for coping in difficult situations. It also includes a positive outlook on life in general. Meaningfulness (the motivational aspect) means that the individual is happy with life and finds it meaningful to be active in life situations, so the resolving of these situations has meaning and purpose.

According to K. Glanz et al. (2005), SOC is a strong predictor of smoking behavior. Adolescents with high SOC may, according to the authors, be better prepared to cope with peer pressure, less susceptible to advertising appeals, and less tempted to experiment with smoking out of curiosity or rebelliousness. Of the three subscales of SOC, manageability was the strongest predictor of smoking behavior, followed by meaningfulness and then comprehensibility. Among adults with minor trauma, low quartiles of SOC have been associated with smoking (Neuner et al., 2006). According M. Bacikova et al. (2007), low sense of coherence is associated mainly with university students' smoking because of habit and because of anxiety and anger reduction. On the other hand, different results were presented by M. Kuuppelomaki and P. Utriainen (2003), who also conducted their research among university students. They found no associations between any SOC dimensions and smoking

or drinking behavior. Hence on the whole the results of studies focusing on the associations between SOC and smoking are inconclusive.

Self-Esteem and Smoking

Self-esteem is the evaluative and affective dimension of the self-system, and is considered as equivalent to self-regard, self-estimation and self-worth. It refers to a person's global appraisal of his/her positive or negative value, based on the scores a person gives him/herself in different roles and domains of life. Self-esteem is an important non-specific risk as well as protective factor linked to various health and social outcomes (Mann et al., 2004; Wild et al., 2004). As the ability to form an accurate model of oneself and the ability to use it to operate effectively in life, self-esteem is a component of intra-personal intelligence. Positive self-esteem is also a protective factor that contributes to better health and positive social behavior through its role as a buffer against the impact of negative influences. Self-esteem could be said to serve as a defence mechanism that promotes well-being by preserving one's internal balance and maintaining appropriate perception of reality as basic elements of mental health. Consequently, unstable self-concept and poor self-esteem can play a critical role in the development of an array of mental disorders and social problems, such as depression, anxiety, eating disorders, delinquency, substance abuse and high-risk behavior, school drop-out, poor social functioning, academic failure and dissatisfaction (Mann et al., 2004; Scheier et al., 2000). Self-esteem should be examined not only as a cause, but also as a consequence of problem behavior (Mann et al., 2004). Adolescents with low self-esteem are at greater risk of drug and alcohol abuse and tobacco use (Crump et al., 1997; Jones, Heaven, 1998; Scheier et al., 2000; Carvajal et al., 2000). Optimism, happiness, hope and positive self-esteem are determinants of avoidance of substance abuse by adolescents, mediated by attitudes, perceived norms and perceived behavioral control (Carvajal et al., 2000). Under circumstances of insecurity and low self-esteem, individuals either look for reassurance in others though high-risk behavior, such as smoking, or they withdraw from the group.

There are articles that separately explore interactions between Eysenck's personality dimensions, self-esteem and sense of coherence in relation to smoking (Kawakami et al., 2000; Harakeh et al., 2006; Kuuppelomäki, Ultriainen, 2003; Mann et al., 2004). We did not find any paper exploring the combination of all of these aspects of personality in relation to smoking, even when it might be important with regard to tailoring of intervention for young people. The aim of this study is to analyze the effect of Eysenck's personality dimensions (extraversion, neuroticism, psychoticism), self-esteem (positive and negative self-esteem) and sense of coherence (manage- ability, comprehensibility, meaningfulness) on the probability of being a smoker among university students.

METHOD

Procedure and Sample

Data were collected in April and November 2004 at universities in Kosice. Questionnaires were filled in under the guidance of field workers during compulsory lectures, but participation in the study was voluntary. Identifying data were collected on a separate sheet together with an

identifying code, and the rest of the questionnaire was marked only with this code to guarantee confidentiality. This procedure was explained to respondents before data collection. Of the total sample of 882 eligible students, 830 participated (94.1%), 354 male and 476 female, mean age 20.5 years, (SD = 1.4). Most of the respondents came from the Faculty of Science (45%); 35% of them studied at the Technical University (metallurgy, mining), and 20% of them at the Medical Faculty. Half of the males came from the Technical University, while half of the females came from the Faculty of Science.

Measures

The shortened version of the Eysenck Personality Questionnaire (Eysenck, Eysenck, 1985) consists of 24 items and includes three scales that represent the Eysenckian personality structure. These scales are: extraversion (6 items), which is composed of facets that include gregariousness, assertiveness, positive emotions and activity level, and is thought to measure the continuum of extraverted and introverted behavior; neuroticism (6 items), which is a measure of emotionality, anxiety proneness, worry, depression and psychological vulnerability; and psychoticism (6 items), which is a mixture of tough-mindedness, risk-taking, impulsivity, hostility and unsocialized sensation-seeking. This inventory requires a Yes or No response to statements that provide information regarding the personality dimensions of extraversion, neuroticism and psychoticism. The sum score for each dimension ranges from 0 to 6. Higher score indicates higher extraversion, neuroticism, and psychoticism.

Sense of coherence was measured using the 13-item short form of the Orientation to Life Scale (Antonovsky, 1987, abbreviated to SOC-13). This version of Antonovsky's Sense of Coherence scale measures personal integrity and cohesion using three factors: comprehensibility, manageability and meaningfulness. According to M. Eriksson and B. Lindström (2005), the use of the factorial structure of the scale in the three dimensions is not completely clear. There is no general rule about using three dimensions instead of a global score, except the fact that it was intended by A. Antonovsky "to use the SOC questionnaire as a measurement of the whole not examining the three subscales separately" (Eriksson, Lindström, 2005, p. 462). Each item in the SOC scale presents two response options at opposite poles; these verbal descriptions are linked by a numerical scale from 1 to 5, with 1 meaning "never" and 5 "always". After reversal of the five items, a total score as well as a sum score for each dimension was summed. The total SOC score varies from 13 to 65, the sum score for manageability and meaningfulness ranges from 4 to 20, and the sum score for comprehensibility ranges from 5 to 25. Higher score indicates higher sense of coherence.

Self-esteem was assessed using the Rosenberg Self-esteem Scale (RSE) (Rosenberg, 1965). It was originally developed to measure global feelings of self-worth or self-acceptance. The 10 items of the RSES assess a person's overall evaluation of his or her worthiness as a human being (Rosenberg, 1979). Each item has a four-point scale ranging from 1 = "strongly agree" to 4 = "strongly disagree". In line with previous studies (Sarkova et al., 2006) we used two dimensions of the RSE: "negative self-esteem" (5 items: no good at all, not proud, feel useless, lack of respect and feel a failure) and "positive self-

esteem" (5 items: satisfied with self, have a number of good qualities, equal to others, feel valuable and positive attitude), as well as total sum score indicating "global self-esteem". Score on the global self-esteem ranges from 10 to 40, and the higher score indicates higher self-esteem. Score on positive as well as negative self-esteem ranges from 5 to 20; higher score indicates lower positive and higher negative self-esteem.

University students were asked how many cigarettes they smoked per day. They could select one of the following options: 1) I do not smoke; 2) not more than one cigarette per day; 3) 2-5 cigarettes per day; 4) 6-10 cigarettes per day; 5) 11-15 cigarettes per day and 6) 16 or more cigarettes per day. Those respondents who answered that they smoke one or more cigarettes per day were considered to be smokers.

The data were analyzed using SPSS 11.1 statistical software. The difference between smokers and non-smokers was tested using independent t-test separately among male and female. Logistic regression was used to explore the contribution of Eysenck's personality dimensions, dimensions of sense of coherence and dimensions of self-esteem to the probability of being a smoker. This model was explored separately among males and females.

RESULTS

Almost three quarters of male as well as female students considered themselves to be non-smokers (68% of male, 71% of female). Most of the respondents who smoked reported smoking not more than 5 (11.3% of male, 12.6% of female), or 6 to 10 (12.4% of male, 11.1% of female) cigarettes per day. Only a very small proportion of respondents reported smoking more than 15 cigarettes per day (3.4% of male, 0.8% of female).

As may be seen in Table 1, smokers, male as well as female, scored higher in all of the explored Eysenck's dimensions of personality, i.e. extraversion, neuroticism and psychoticism. Male smokers reported higher comprehensibility and meaningfulness, but lower manageability in comparison with non-smokers. Female smokers scored lower in all three dimensions of coherence. Lower positive self-esteem and higher negative self-esteem scores were found among smokers in comparison with non-smokers among both males and females. Significant differences between smokers and non-smokers were confirmed only in extraversion, and among female in meaningfulness also.

A significant effect of extraversion, but not neuroticism or psychoticism, on the probability of being a smoker was found among males; among females, too, extraversion significantly contributed to the probability of being a smoker. Positive as well as negative dimensions of self-esteem had no significant effect on smoking among males, but negative self-esteem significantly contributed to smoking among females. None of the three dimensions of coherence affected male smoking, but meaningfulness significantly affected female smoking (Table 2).

A higher score in extraversion was associated with increased risk of being a smoker among men, while higher scores in extraversion and negative self-esteem were associated with increased risk of being a smoker among women. On the other hand, a higher score in meaningfulness among women was associated with decreased risk of being a smoker.

Table 1. Eysenck's personality dimensions, sense of coherence (total SOC score, comprehensibility, manageability, meaningfulness) and self-esteem (global, positive, and negative self-esteem) comparing smokers and non-smokers. The columns show mean scores, standard deviations and t-tests

	Male			Female		
	nonsmokers	smokers	sig.	nonsmokers	smokers	sig.
Extraversion	3.40 (2.20)	4.62 (1.94)	.000	3.63 (2.17)	4.69 (1.89)	.000
Neuroticism	1.81 (1.70)	1.96 (1.80)	ns	2.22 (1.80)	2.22 (1.82)	ns
Psychoticism	1.66 (1.05)	1.82 (1.03)	ns	1.45 (0.79)	1.52 (0.86)	ns
Total SOC score	42.18 (6.60)	42.79 (6.19)	ns	41.14 (6.32)	40.17 (7.22)	ns
Comprehensibility	15.84 (3.56)	16.34 (3.33)	ns	14.97 (3.44)	14.87 (3.41)	ns
Manageability	12.78 (2.24)	12.63 (2.32)	ns	12.25 (2.37)	11.95 (2.31)	ns
Meaningfulness	13.54 (2.53)	13.80 (2.70)	ns	13.97 (2.58)	13.24 (3.13)	.026
Global self-esteem	29.13 (3.68)	29.30 (3.51)	ns	28.72 (3.63)	29.38 (3.49)	ns
Positive self-esteem	9.67 (1.99)	9.67 (1.77)	ns	9.90 (1.83)	9.65 (1.81)	ns
Negative self-esteem	13.81 (2.34)	13.95 (2.40)	ns	13.63 (2.40)	14.03 (2.25)	ns

Table 2. The effects of Eysenck's personality dimensions, sense of coherence and self-esteem on smoking among university students (logistic regression)

	Male			Female		
	sig.	OR	CI 95%	sig.	OR	CI 95%
Extraversion	.000	1.39	(1.19-1.63)	.000	1.32	(1.16-1.52)
Neuroticism	ns	1.10	(0.91-1.34)	ns	0.93	(0.79-1.11)
Psychoticism	ns	1.09	(0.84-1.42)	ns	0.85	(0.62-1.15)
Comprehensibility	ns	1.03	(0.94-1.14)	ns	0.98	(0.90-1.08)
Manageability	ns	0.97	(0.84-1.12)	ns	0.95	(0.85-1.06)
Meaningfulness	ns	1.01	(0.90-1.14)	.003	0.84	(0.75-0.95)
Positive self-esteem	ns	1.05	(0.89-1.24)	ns	1.05	(0.90-1.23)
Negative self-esteem	ns	0.98	(0.85-1.14)	.026	1.17	(1.02-1.34)

DISCUSSION

While among male university students only extraversion contributes to higher probability of being a smoker, females seem to be more prone with regard to explored personality factors. Higher extraversion, as well as negative self-esteem, seems to be a risk factor and higher meaningfulness seems to be a protective factor with regard to smoking among female university students.

Eysenck's Personality Dimensions and Smoking

The component of personality associated with smoking in this study is extraversion. In the past decades several studies have demonstrated that smokers tend to attain higher extraversion scores compared with nonsmokers (Rondina et al., 2005; Kawakami et al., 2000). When smoking is perceived as either a stimulant or a sedative, extraversion becomes a factor for increasing the level of excitement, or otherwise of reducing boredom (Rondina et al., 2005). Extraversion in relation to incidence of smoking is influenced by culture and the pressure of the social environment (Spirling, 2003). In countries where the prevalence of smokers is increasing every year, the relationship between extraversion and smoking is stronger than in countries where smoking is perceived as unwelcome and the number of smokers is decreasing. In the study by M. Sarkova et al. (2006), the prevalence of Slovak adolescent smokers was significantly higher in 2002 in comparison with 1998, but only in females. Conversability is fancied among young people, as it is connected with achievement and with social pressure to behave desirably, so from this point of view extraversion is a risk factor. Extraversion is seen as favorable for survival in modern society; an active, extraverted gregarious temperament tends to incline a person towards the exciting pace of modern lifestyles (Spirling, 2003).

Sense of Coherence and Smoking

A high level of SOC in connection with life satisfaction and high quality of life is generally considered as a protective factor in stress situations, and is important in the prediction of physical as well as psychological health. A low level of meaningfulness may be viewed as an indicator of existential vacuum (Antonovsky, 1979, 1987, 1992). In this sense, female university students with feelings of existential vacuum may be a potential risk group. The study by M. Habroe et al. (2006) indicated that SOC is not necessarily stable throughout adulthood. Meaningfulness as the motivational dimension of a person's orientation towards life goals is closely connected with the person's idea about his/her future and, regarding smoking, about the ability to consider the immediate gain from smoking compared against the more distant risk in the future. There seems to be a possibility of influencing this attribute through individual and group intervention during university study.

Self-Esteem and Smoking

High positive self-esteem was not a protective factor for smoking in this study. Higher negative self-esteem, on the other hand, significantly contributed to the probability of being a smoker among female students. Empirical evidence for a relationship between self-esteem and adolescent risk behavior is not consistent. Several cross-sectional and longitudinal studies have linked low self-esteem with current and/or future kinds of risk behavior (Kaplan, 1975; Mann et al., 2004; Wild et al., 2004). Other studies have found that after controlling for other highly-correlated child and family background variables, low self-esteem is unrelated to increased smoking (Carvajal et al., 2000). Negative self-esteem has a significant effect on risky behavior (smoking, alcohol consumption, being drunk, having experience with drugs) among adolescents (Veselska et al., 2007). The sample of university students is

older and represents just a part of the general population that might be characterized by higher socioeconomic status and higher self-esteem. This might be a reason why negative self-esteem did not have (male) or had only modest (female) effect on smoking in our sample. Results of another study (Wild et al., 2004) provide preliminary evidence that specific domains of self-esteem are differentially associated with particular risk behavior. Their study showed that the likelihood of smoking cigarettes may increase with low self-esteem in particular domains (family, school) and decrease with low self-esteem in other areas (peers). One probable reason for inconsistencies in these findings is that researchers have used different operational definitions of self-esteem, and have differed in the extent to which they have controlled for its covariates. For example, the most popular instrument, the Rosenberg Self-esteem Scale, displays a transparent one-dimensional factor structure, though some studies have found underlying subfactors within the Rosenberg Self-esteem Scale (Sarkova et al., 2006). It will be useful in future to pay attention to self-esteem not only when it comes to high and low levels, but also other forms and aspects of self-esteem. In particular, aspects such as stability, self-complexity, self-integrity, self-confidence, self-linking and self-competence and their mutual relationships may prove to be protective personality factors.

CONCLUSION

To conclude, our research results show that personality may have protective as well as risk aspects with regard to smoking. In our study, high scores for extraversion for both genders and negative self-esteem for women were viewed as risk factors, and a high score in meaningfulness as a protective factor for smoking among female university students. We found more associations between personality traits and smoking among women than among men. Because it seems to be that the mechanisms relating personality to smoking are gender specific, it is necessary to study the determinants of smoking separately for men and women. We consider as being at risk the group of female university students with high extraversion together with higher negative self-esteem and the lack of feeling of meaningfulness. It will be possible to explore and maybe also confirm these ideas in our next study. Personality is the factor through which a person can make changes in his/her life. Interventions based on this knowledge should focus on extraversion in both genders and on negative self-esteem and meaningfulness in females. The required individual form of intervention may be oriented towards existential issues, plans, and understanding of the processes of emotional intelligence, linking the need for spontaneity with responsibility, momentary experience with perception of future prospects, or reinforcing and looking for sources of internal strength, integrity and self-contentedness. Such a look at the different aspects of self may provide the person with "new" experiences. Understanding and clarification of the mechanisms influencing the relationships between personality and smoking status, or the smoking process, may contribute to the stimulation of protective personality factors in prevention as well as psychological intervention. Goal-directed group and individual interventions are a "meaningful" challenge for theory, research and practice.

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OSOBNOSTNÉ DIMENZIE, ZMYSEL PRE KOHERENCIU A SEBAÚCTA AKO RIZIKOVÉ/PROTEKTÍVNE FAKTORY FAJČENIA UNIVERZITNÝCH ŠTUDENTOV

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Súhrn: Logistickou analýzou bol zisťovaný vplyv osobnostných čŕt (extroverzie, neurotizmu, psychotizmu), sebaúcty a zmyslu pre koherenciu na fajčenie osobitne vo vzorke vysokoškolákov a vysokoškoláčiek (n = 830, priemerný vek 20,5 roka). Vyššia extroverzia a vo vzorke žien aj vyššie skóre negatívnej sebaúcty a nižšia zmyslupnosť zvyšujú pravdepodobnosť byť fajčiarom/fajčiarkou. Pri aktivitách podporujúcich zdravie je dôležité brať do úvahy rôznu úlohu aspektov osobnosti. V tomto prípade extroverziu a negatívnu sebaúctu chápeme ako rizikové faktory, kým zmyslupnosť ako protektívny faktor vo vzťahu k fajčeniu vysokoškolákov.